

USSR / Microbiology. General Microbiology. Effect of F  
External Agents. Disinfection.

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5426.

Author : Sokurova, Ye. N.

Inst : Not given.

Title : Effect of  $\beta$ -Radiators on Development and Physiological Activity of Azotobacter.

Orig Pub: Mikrobiologiya, 1957, 26, No 5, 519-535.

Abstract: The effect of a mixture of  $\beta$ -radiators (fragments of uranium-235 fission) on Azotobacter development was studied. The radiators were introduced into nutritive media in concentrations of 0.1-160 millicurie/liter. Upon introduction of small quantities of radiators into nutritive media, a temporary stimulation of bacterial develop-

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USSR / Microbiology. General Microbiology. Effect of F  
External Agents. Disinfection.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652130013-9"

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5426.

Abstract: ment is noted. Individual processes taking place in the cells display different sensitivity to the action of radiators. The most sensitive is cell division, and the most stable are energy processes and fixation of atmospheric nitrogen. Although fixation of atmospheric nitrogen is a very stable process, incorporation of fixed nitrogen into protein becomes disturbed at comparatively low concentrations of radiators, and in media and cultures there is a change of the relation of protein and non-protein nitrogen towards the increase of the nonprotein part. Under cultivation in media with radiators, the Azotobacter cells strongly concentrate the radio-

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USSR / Microbiology. General Microbiology. Effect of F  
External Agents. Disinfection.

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5426.

Abstract: active elements: the radioactivity of the the dry biomass exceeds 500-600 times that of the surrounding medium. Ye. N. Sokurova.

EXCERPTA MEDICA Sec 14 Vol 13/6 Radiology June 59

1099. COMPARATIVE STUDY OF THE EFFECT OF ALPHA AND BETA RADIATIONS ON MICROORGANISMS (Russian text) - Sokurova E. N. - BIOFIZIKA 1958, 3/4 (474-478) Graphs 3 Tables 5

In accordance with data already cited in the literature, the results of these experiments demonstrated that  $\alpha$ -radiations, giving a high linear ionization density, inhibit the development of bacteria considerably stronger than  $\beta$ -radiations.  $Po^{210}$ , introduced into a nutritive medium in concentrations equivalent in their dose to stimulating concentrations of  $\beta$ -radiations, sharply inhibits the development of nitrobacteria and of azotobacteria. Mixed  $\alpha$ - and  $\beta$ -radioactive substances (radium) in the medium in concentrations equivalent to  $\alpha$ - and  $\beta$ -radiations produce an intermediate effect. After an initial inhibition of development radium may give a stimulating effect. The energetic processes in microorganisms and their processes of atmospheric nitrogen fixation are also more sensitive to the effect of  $\alpha$ - than of  $\beta$ -radioactive substances. (XIV, 4, 5, 16)

*Inst. Biology, Ural Affil AS USSR*

AUTHOR: Sokurova, Ye. N. 20-119-2-19/60

TITLE: X-Ray Induced Hereditarily Modified Forms of Yeast Organisms Producing Increased Amounts of Ergosterin (Vozniknoveniye pod vliyaniyem rentgenovskikh luchey nasledstvenno izmenennykh form drozhzhevykh organizmov, obrazuyushchikh povyshennoye kolichestvo ergosterina)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 2, pp 265 - 266 (USSR)

ABSTRACT: In the irradiation of yeast organisms with great dosages of X-rays and in their subsequent cultivation on nutrients a considerable amount of ergosterin accumulates in them. Such cultures contain 2-3 times as much ergosterin as non irradiated cultures. In connection herewith it is of interest to investigate if considerably modified yeast organisms (producing an increased amount of ergosterin) can form on the action of this irradiation. For the investigation a culture of *Saccharomyces carlsbergensis* Froberg with a normally rather high ergosterin content was selected. The irradiation was carried out in aqueous solutions by means of the X-ray appa-

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20-119-2-19/60

X-Ray Induced Hereditarily Modified Forms of Yeast Organisms Producing Increased Amounts of Ergosterin

content. In long lasting cultivation without repeated irradiation the high content of ergosterin in the irradiated races slowly decreases. Thus the hereditary feature of this characteristic is not very marked. An occurrence of yeast races with increased ergosterin content is also possible in the case of irradiation with ultraviolet light. The irradiated yeast races with increased ergosterin content do not essentially differ in their radiation sensitivity from the original forms, although indications exist of a possible protective action of ergosterin against radiation dependent injuries. There are 2 tables and 2 references, 2 of which are Soviet.

ASSOCIATION: Institut mikrobiologii Akademii nauk SSSR (Institute for Microbiology AS USSR)

Card 3/4  
3

MEISEL, M.M., RENTZOVA, T.S., GALTOVA, R.D., MEDVEDOVA, G.A., FOMOSHEIKOVA, N.A.,  
SOKUROVA, YE.N., SELIVERSTOVA, L.A., POGLASOVA, M.M. and NOVICHKOVA, A.T.

"Cytophysiological and biochemical investigation of micro-organisms in the  
process of post-radiation reactivation."

Report submitted to the 2nd Intl. Congress of Radiation Research,  
Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

SOKUROVA, Ye.N. (Moskva)

Development of radioresistance in micro-organisms. Usp. soor. biol.  
53 no.1:69-84 '62. (MIRA 15:5)  
(MICRO-ORGANISMS) (RADIATION--PHYSIOLOGICAL EFFECT)

SOKUROVA, E.N. [Sokurova, Ye.N.]

Emergence of radioresistance in microorganisms. Analele biol  
16 no.5:23-41 S-0 '62.

SHUM VA, Ye.N.; VILKINA, T.M.

Biochemical mutations in *Torulopsis utilis* following the action  
of ionizing irradiations. Radiobiologia 2 no.1:36-42 Jan 1962  
(MIRA 18:1)



SOKURSKIY, Yu. N.

Jun 50

USSR/Physics-X-Ray Analysis  
X-Ray Cameras

"X-Ray Methods of Adjusting Crystals," S. S. Kvitka, Yu. N. Sokurskiy,  
M. M. Umanskiy, Moscow State U

"Zavod Lab" Vol XVI, No 6, pp 696-705

Describes X-ray methods for adjusting crystals of any syngony by x-ray  
photographs of oscillations or Lave patterns. Suggests ~~more~~ expedient  
construction of film holder and goniometric head for X-ray camera.

PA 163T85

SOKURSKIY, YU. N.  
KONOBAYEVSKIY, S.T., ZAYMOVSKIY, A. S., LEVITSKIY, B. M., SOKURSKIY, YU. N.,  
CHEBOTAREV, N. T., BOBKOV, V. V., YEGOROV, P.P., NIKOLAYEV, G. N. and IVANOV, A. A.

"Some Physical Properties of Uranium, Plutonium and Their Alloys,"  
paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic  
Energy, Geneva, 1 - 13 Sept 58.

AUTHORS: Sokurskiy, Yu. N., Protsenko, L. N. 89-4-5-5/26  
 TITLE: Deformation Systems of  $\alpha$ -Zirconium (Sistemy deformatsii  $\alpha$ -tsirkoniya)  
 PERIODICALS: Atomnaya Energiya, 1958, Vol. 4, Nr 5, pp. 443 - 447 (USSR)  
 ABSTRACT: The deformation systems of  $\alpha$ -zirconic iodide were investigated in large-grained (average diameter 0.5 - 1.5 mm), semi-crystalline (5 x 5 x 7 mm) samples that had been deformed by annealing. The orientation of the grains was determined by a Laue diagram. This was taken by a special reflex camera with the light ray having particularly small dimensions. The indices of the deformation systems were determined by means of the double-plate method or of the method of geometrical localization of the poles.  
 It was stated that  $\alpha$ -zirconium is deformed by slip in the plane (10 $\bar{1}$ 0) in direction  $[\bar{1}210]$  and in the plane (10 $\bar{1}$ 1). A series of twinning-systems was determined in  $\alpha$ -zirconium:  
 a)  $K_1(10\bar{1}2), \eta_1[\bar{1}011], K_2(10\bar{1}2), \eta_2[\bar{1}011], s = 0,173$

Contd 1/2

Deformation Systems of  $\alpha$ -Zirconium

89-4-5-5/26

- b)  $K_1(11\bar{2}1), \eta_1 [1126], K_2(0001), \eta_2 [1120], s = 0,629$
- c)  $K_1(1122), \eta_1 [1123],$
- d)  $K_1(11\bar{2}3), \eta_1 [\bar{1}\bar{1}22]$  observed in one case only.

There are 5 figures, 1 table and 6 references, none of which are Soviet.

SUBMITTED: December 14, 1957

AVAILABLE: Library of Congress

1. ~~Alpha-zirconic~~ iodide—Deformation

Card 2/2

AUTHOR: Zaymovskiy, A. M., Bergayev, G. Ya., Titova, V. V., Lomovskiy, P. M., Kourstkiy, Yu. N.

TITLE: The influence of the Structure and Properties of Uranium on its Behaviour Under Irradiation (Vliyaniye struktury i svoystv urana na ego povedeniye pod oblucheniye)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 4, pp 419-420 (1958)

ABSTRACT: It was possible to show that by varying the composition of the alloys and by changing the thermal treatment the consequences of the modification of the size of grain of the nucleus and the texture of uranium after irradiation can partly be eliminated. The dependence of the size of the nuclear grain of the enriched uranium, its hardness, its strength limit, and its stretching-strain limit upon the iron-, silicon-, and aluminum content in the alloy is determined by experiment. The cooling-down rate and the content of the admixtures mentioned influence the position of the  $\beta$ - $\alpha$  transformation point. At a cooling-down rate of 400° C/sec and a silicon content of 0.05 weight percents the transformation point between the  $\beta$ - and the  $\alpha$ -phase decreases to 550° C. Experiments proved a 50- to 100-fold acceleration of

NOV 64-5-4-3/24

The Influence of the Structure and Properties of Uranium on its Behavior Under Irradiation

Creep under irradiation ( $\dot{\epsilon} = 3 \cdot 10^{-12}$  m/cm<sup>2</sup>.sec) for textured uranium as well as for uranium with a disorientated structure. The creep-rate of disorientated uranium is closely connected with the velocity of stand-by losses. The mechanical properties of uranium, especially dilatation in the reactor, were investigated experimentally. Even after a short stay of the uranium in the reactor (less than 1 hour) the relative modification of the length becomes less and the strength limit increases. The experimentally found values of  $\dot{\epsilon}$  are considerably higher than those given in reference 1. A. A. G. Iannin, V. M. Gopinskhaya, V. K. Zakharova, L. A. Protsenko, V. N. Golovanova, and E. A. Borisov took part in the investigations. There are 10 figures, 1 table, and 12 references, 1 of which is Soviet.

1964-04-01 : July 21, 1966



So KURSKIY, Yu. N.

21(4) **PEACE I BOOK IRRADIATION** SOV/2714  
International Conference on the Peaceful Use of Atomic Energy. 2nd,  
Geneva, 1958

**Books:** *Atomika uchebnyy*; *Yadernyye goruyshyye i reaktoryye atomy*.  
(Reports of Soviet Scientists: Nuclear Fuel and Reactor Metals) Moscow,  
Atomizdat, 1959. 670 p. (Series: *Ita*; *Trudy*, vol. 3, 6, 100 copies  
printed.

**Ms. (Title page):** A.A. Bochvar, Academician, A.P. Vinogradov, Academician,  
V.S. Yemel'yanov, Corresponding Member, USSR Academy of Sciences, and  
A.P. Zarkov, Doctor of Technical Sciences; Ed.: E.I. Masel'. V.V.  
Pereversev and O.M. Pchelintsev; Tech. Ed.: E.I. Masel'.

**REMARKS:** This volume is intended for scientists, engineers, physicians, and  
biologists working in the production and peaceful application of atomic  
energy for medicine and higher technical education. The subject is taught in  
higher technical schools where the subject is taught; and for people  
interested in atomic science and technology.

**CONTENTS:** This is volume 3 of a 6-volume set of reports on atomic energy,  
presented by Soviet scientists at the 5th International Conference on the  
Peaceful Use of Atomic Energy, held in Geneva, September 12-13, 1958.  
Volume 3 consists of two parts. The first part, edited by V.S. Yemel'yanov,  
is devoted to geology, prospecting, concentration and processing of nuclear  
source material. The second part, edited by O.L. Zverev, includes 27 reports  
on metallurgy, metallography, processing technology of nuclear fuels and  
reactor metals, and neutron irradiation effects on metals. The titles of the  
individual papers in most cases correspond word for word with those in the  
English language edition on the Conference proceedings. See  
SOV/2081 for the titles of the other volumes of the set.

**Signatures:** A.P. Zarkov, V.S. Yemel'yanov, V.M. Adamchik and Y.N. Burlikov.  
(Report No. 2091)

**Index:** Zarkov, A.P. and V.M. Adamchik. Melting and Casting of Beryllium  
(Report No. 2048)

**Val'sky, A.M. and V.M. Adamchik. I.P. Zarkov, E.K. Koltman, and T.B. Pochillo.**  
Production of Chemically Pure Strontium, Barium, Magnesium, and Calcium  
(Report No. 2090)

**Bochvar, A.A., O.L. Zverev, A.A. Zhukov, I.Y. Kolobova, and  
O.L. Zverev.** Effect of Thermal Straining and Annealing on the Mechanical and  
Structural Stability of Various Metals and Alloys (Report No. 2190)

**Zverev, O.L., O.L. Zverev, I.Y. Zverev, E.K. Koltman, E.K. Koltman, and Y.N.**  
Stability, Influence of the Structure and Properties of Uranium on the  
Behavior Under Irradiation (Report No. 2191)

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BOCHVAR, A.A., akademik, red.; YEMEL'YANOV, V.S., red.; ZVEREV, G.L., red. toma; IVANOV, A.N., red. toma; SOKURSKIY, Yu.N., red. toma; STER-LIN, Ya.M., red. toma; PEREVERZEV, V.V., red.; PCHELINTSEVA, G.M., red.; MAZEL', Ye.I., tekhn. red.

[Transactions of the International Conference On The Peaceful Uses of Atomic Energy] Trudy Vtoroy mezhdunarodnoy konferentsii po mir-nomu ispol'zovaniyu atomnoy energii, 2d, Geneva, 1958. Izbrannye Doklady inos rannykh ucherykh. Moskva, Izd-vo Glav. uprav. po ispol'-zovaniyu atomnoi energ. pri Sovete Ministrov SSSR. Vol.6. [Nuclear fuel and reactor materials] IAdernoe goriuchee i reaktornye materialy. Pod obshchei red. A.A.Bochvara i Emel'ianova V.S. 1959. 702 p. (MIRA 14:10)

1. International Conference on The Peaceful Uses of Atomic Energy. 2d, Geneva, 1958. 2. Chlen-korrespondent AN SSSR (for Yemel'yanov). (Nuclear fuels) (Nuclear reactors—Materials)

21(8), 18(7)

SOV/89-6-4-4/27

AUTHOR: Sokurskiy, Yu. N.

TITLE: The Influence of Radiation Upon Solids (Vliyaniye oblucheniya na tverdye tela)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 4, pp 403-425 (USSR)

ABSTRACT: On the basis of the Geneva reports of 1958 listed below this review has been compiled and deals with the subject mentioned in the title. As far as the quantitative damage done to irradiated material can be experimentally determined, it is recorded by tables like the damage caused by neutron irradiation in uranium, plutonium, and some of their alloys. Also the influence exercised by a high degree of burn-up (up to 2 atomic%) upon the shape of the individual parts made from uranium and its alloys as well as the increase of volume connected therewith is taken into account. The data concerning uranium-molybdenum alloys (9% by weight) and pure uranium are given separately. These data show the extent of the influence exercised by irradiation upon atomic mobility in uranium and its alloys. The abstract contains also data concerning the influence exercised by temperature and the radiated dose upon the mechanical properties of the various types

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The Influence of Radiation Upon Solids

SOV/80-6-4-4/27

of steel and other building materials. Furthermore, data concerning the influence exercised by irradiation upon non-metallic materials such as  $\text{BeO}$ ,  $\text{UO}_2\text{-BeO}$ ,  $\text{UO}_2\text{ThO}_2$ , graphite, etc, are given. The following reports were used for the compilation of information: 29, 50, 80, 190, 612, 614, 617, 618, 621, 622, 679, 713, 998, 1158, 1159, 1452, 1785, 1805, 1855, 1866, 1878, 1890, 1978, 2052, 2129, 2192, 2385, 2405. There are 12 figures, 2 tables, and 34 references, 8 of which are Soviet.

SUBMITTED: February 7, 1959

Card 2/2

S/089/60/008,'04/04/009  
B113/B017

AUTHORS: Sokurskiy, Yu. N., Bobkov, Yu. V.

TITLE: Investigation of the Increase in Internal Friction in Samples  
of Polycrystalline Uranium With Temperature Variation

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 4, pp. 348-353

TEXT: Samples of polycrystalline uranium of varying composition were investigated which had been hardened from the gamma phase, annealed in the gamma phase and such which had been recrystallized. The experiments were made in three temperature intervals from 20 to 290°C. In this connection the dependence of the increase in internal friction on the heating rate and the various structural states was observed. The rapidity with which internal friction increases is gradually reduced and attains a value which is approximately proportional to the heating rate of the sample. The increase in internal friction is related with the strain which is produced in the sample with temperature variation due to the anisotropy of the coefficient of thermal expansion. At temperatures exceeding 350°C the effect of the increase in internal friction is

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✓B

Investigation of the Increase in Internal  
Friction in Samples of Polycrystalline Uranium  
With Temperature Variation

S/089/60/008/04/04/009  
B113/B017

practically completely lacking. On heating the samples even measurable  
macroscopic changes can be observed. There are 6 figures, 1 table, and  
11 references: 5 Soviet, 2 English, and 4 American.

SUBMITTED: May 30, 1959

✓B

Card 2/2

85562

S/089/60/009/005/005/020  
B006/B070

21,1330

AUTHORS: Sokurskiy, Yu. N., Bobkov, Yu. V. ✓

TITLE: Increase of Internal Friction in Uranium on a Change of  
Its Temperature ✓

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 5, pp. 392 - 398 4

TEXT: The present paper follows a previous one in which it was established that the internal friction of uranium increases rapidly on heating. This increase in internal friction is attributed to microstresses and deformations of the polycrystalline grains of the sample due to anisotropic change of form of the crystals on change of temperature. A theoretical and an experimental part of the present paper give a semiquantitative estimate of the dependence of the increase of internal friction on the rate of heating, the frequency, and the amplitude of pendulum oscillations. First, the temperature-dependent change of deformation  $\epsilon$  and stress  $\sigma$  in a grain of  $\alpha$  uranium (average coefficient of linear expansion  $\alpha_m = 17.3 \cdot 10^{-6}$ ) is theoretically studied and some

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Increase of Internal Friction in Uranium  
on a Change of Its Temperature

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B006/B070

formulas are derived. The theoretical dependence of the increase of internal friction on heating from 20° to 120°C on the quantity  $\nu\tau$  ( $\nu$  - rate of heating,  $\tau$  - period of oscillation) is compared with the experimental values in Fig.3. The apparatus used for the experiment, and the method of preparation of the samples were the same as described in Ref.1; the method was changed in unimportant details. The results of the experiments are discussed in detail. It is found that the increase of internal friction as a function of the heating time for different values of  $\tau$  and  $\nu \leq 50^\circ\text{C}/\text{min}$  is similar to the previously obtained result for  $\tau = 0.5$  sec and  $\nu \leq 20^\circ\text{C}/\text{min}$ . The details of the dependence are shown in Fig.3. There were great difficulties involved in the determination of the amplitude dependence. Fig.4 shows the change  $\Delta$  of internal friction as a function of  $A_{\text{max}}$ . It was experimentally found that

$\Delta = 7.2 \cdot 10^{-3} + 3.5 \cdot 10^{-8} / A_{\text{max}}$ . The effect of the initial state of the

sample on the increase of internal friction was studied, and is shown in several diagrams. It is found that on a change of temperature the relaxation processes in polycrystalline uranium are intensified and lead to an increase of internal friction. The increase of internal

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Increase of Internal Friction in Uranium  
on a Change of Its Temperature

S/C89/60/009/005/005/020  
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friction depends mainly on  $v\tau$ . For small values of  $kv\tau/A$ , it is proportional to  $v\tau$ ; for large values, however, saturation is reached. The theoretical estimates are in good agreement with the experimental data. There are 6 figures, 1 table, and 3 Soviet references.

SUBMITTED: April 4, 1960

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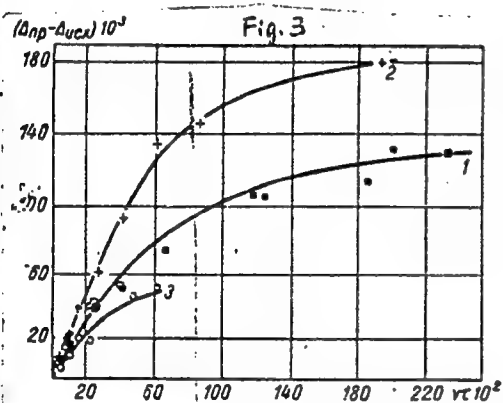


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Legend to Fig. 3:

- 1 - Hardened sample of the composition B ( $\square$  -  $\tau = 0.5$  sec,  $\square$  -  $\tau = 2.6$  sec);
  - 2 - hardened sample of the composition A ( $v \approx 11^\circ\text{C}/\text{min}$ ,  $\tau$  varied);
  - 3 - tempered samples of the composition B ( $\tau$  varied,  $v \approx 11^\circ\text{C}/\text{min}$ ).
- The continuous lines correspond to the theoretical functions.



SOKURSKIY, Yu.N.

Haziquti, Sakairi, and Sugai theory of the growth of  $\alpha$ -uranium  
during its irradiation. Atom. energ. 10 no.3:274-275 Mr '61.

(MIRA 14:3)

(Uraniua)

S/089/61/010/005/014/015  
B102/B214

AUTHOR: Sokurskiy, Yu. N.  
TITLE: Conference on the Effect of Nuclear Radiation on Materials  
PERIODICAL: Atomnaya energiya, v. 10, no. 5, 1961, 540-542

TEXT: In December 1960 there took place in Moscow the Soveshchaniye po deystviyu yadernykh izlucheniya na materialy (Conference on the Effect of Nuclear Radiation on Materials) organized by the departments of technical, physical and mathematical sciences of AS USSR. More than 500 participants and more than 40 papers were registered. In a review talk S.T. Konobeyevskiy gave the results of investigations in and outside of USSR in this field and discussed the problems of plasticity and solidity. G. V. Kurdyumov next spoke on the origins of the increase of the deformation resistance by the irradiation of copper, iron and their alloys. Then followed lectures by S. M. Feynberg (new experiments with CM-2 (SM-2) reactor on radiation effects in materials), N. F. Pravdyuk (radiation effects on low carbon steels), A. D. Amayev, A. V. Yefimov, O. A. Kozhevnikov and others (radiation effects on steels alloyed with titanium and tungsten), V. S. Lyashenko ✓

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Conference on the Effect of Nuclear...

S/089/61/010/005/014/015  
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and others (microstructural change on account of neutron irradiation of Y-7 (U-7) and 3X13 (3Kh13) steels), I. M. Pronman and others (effect of neutron irradiation on white cast iron and cementite), P. A. Platonov (relaxation of inner stresses as a result of irradiation of nickel, nichrome alloy, zirconium, perlite steel, and special spring steel). Over analogous effects on Pt, Mo, Zr, Cu, Ni, bronze, Fe-Al alloy, Fe-Cr alloy, and Y-8 (U-8) steel, there were papers by B. M. Levitskiy, I. Ya. Dekhtyar, A. M. Shalayev, and others. Yu. I. Pokrovskiy, A. I. Zakharov, and others reported on the effect of large doses ( $\sim 5 \cdot 10^{20}$  n/cm<sup>2</sup>) on the inner friction and elastic modulus of Cu, Mg, Al, and Ni. Other speakers were: S. T. Konobeyevskiy and others (effect of reactor radiation on bronze with 1 at% Pu for doses of  $10^{18} - 10^{20}$  n/sec), S. D. Gertsriken and N. P. Plotnikova (effect of  $\sim 10^{20}$  n/cm<sup>2</sup> on the electric resistivity and lattice constant of Fe<sub>3</sub>Al), S. M. Astrakhantsev and Yu. I. Konnov (effect of  $\sim 10^{17}$  n/cm<sup>2</sup> on the K state in X20M80 (Kh20N80) alloy), S. T. Konobeyevskiy and F. P. Butra (diffuse scattering in irradiated single crystals of Si, Mo, Corundum, and diamond), I. V. Telegina and Ye. V. Kolontsova (fragmentation of LiF crystals under

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Conference on the Effect of Nuclear...

S/089/61/010/005/014/015  
B102/B214

neutron irradiation), E. L. Andronikashvili (radiation effects on KCl), A. V. Byalobzheskiy (radiation effect on corrosion), A. K. Kikoin, S. V. Starodubtsev (effect of  $\gamma$ -radiation on floatation and adsorption properties of silica gel), I. Ya. Dekhtyar and A. M. Shalayev (effect of  $\gamma$ -radiation on ferromagnetic metals and alloys), I. D. Konozenko and others (effect of  $\gamma$ -radiation on CdS and CdSe), S. V. Starodubtsev and others (effect of  $\gamma$ -radiation on amorphous selenium and boron), S. V. Starodubtsev, S. A. Azizov, Sh. A. Vakhidov, E. I. Trinkler, and others (effect of  $\gamma$ -radiation on quartz, Rochelle salt, and ferrite). Many papers were concerned with the methods of irradiation and the study of activated samples; N. F. Pravdvuk, A. D. Amavev, V. A. Nikolayenko, B. M. Levitskiy, B. M. Sharov, A. I. Orlov, and others spoke on problems of this kind. The reports on the conference will be published by the Academy of Sciences of USSR. There is 1 Soviet-bloc reference.

Card 3/3

L 40004-55 EPA(s)-2/EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h)/EWA(c)  
Pf-4/Peb JD/HM/GS

ACCESSION NR: AT4049819

S/0000/64/000/000/0104/0108

31  
27  
151

AUTHOR: Konobeyevskiy, S. T.; Levitskiy, B. M.; Sokurskiy, Yu. N.; Andreyev, G. A.

TITLE: The possibilities and prospects of hardening metals and alloys by irradiation

SOURCE: Soveshchaniye po uprochneniyu detaley mashin, 1962. Protsessy uprochneniya detaley mashin (Processes of the hardening of machine parts); doklady soveshchaniya. Moscow, Izd-vo Nauka, 1964, 104-108.

TOPIC TAGS: metal irradiation, alloy irradiation, gamma irradiation, beta irradiation, neutron bombardment, metal hardening, metal surface hardening, radiation hardening

ABSTRACT: It is well known that irradiation may cause not only a deterioration of metal properties, but also their improvement. Thus, radiation sharply increases the yield point and moderately increases the ultimate strength and wear resistance. Hardening under irradiation is accompanied by lowering of plasticity. Different types of radiation, however, act differently on the atoms of the irradiated material. When the primary particles interact with the atoms of metals, energy is transmitted to the metal atoms. When this energy exceeds about 25-35 electronvolts, the atom is displaced from the lattice, and the energy of the first displaced atom may be sufficient for the displacement

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L 40004-65

ACCESSION NR: AT4049819

of other atoms. Thus, clusters of displaced atoms are formed. This displacement affects the properties of alloys considerably. The number of secondary displaced atoms depends on the energy of the primary displaced atom. Under neutron bombardment, when the energy of the primary displaced atoms is great, this number may be several hundred, while gamma and beta irradiation only produces 1 to 2. Point defects arise under irradiation, changing the properties of the metals (increasing electrical resistance, lowering internal friction, increasing the modulus of elasticity, etc.). Dislocations are formed by irradiation, resulting in hardening, which can in some cases be increased by additional irradiation. The future of radiation hardening lies in a combination of irradiation with subsequent heat treatment, irradiation being the initiating factor. It should be noted that new elements are created by irradiation with different properties. At the present stage of development of nucleonics, the cost of irradiation in an atomic pile is too high for neutron bombardment to be used for increasing the strength of large sets of parts. Even though gamma irradiation is weaker, the same results are obtained and it may be used in the future since the material does not become radioactive. Electron irradiation produces changes in structure in the same way as gamma irradiation, but only in the surface layer, causing surface hardening by heating. Heavy ions are also being

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L 40004-65

ACCESSION NR: AT4049819

used for irradiation, resulting in even better hardening of materials. The layers arising under irradiation differ from diffusion layers and may be irregular, but the stability may be increased and the bond with the base metal is better; only the first steps have been made in this direction. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 21May64

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 003

Card

3/2



DUMITRESCU, Traian; IONESCU, Constantin; SOLACOLU, M.

Determining kinetics of austenite transformation into bainite.  
Studii cerc. metalurgie 6 no.4:359-374 '61.

1. Membru al Comitetului de redactie, "Studii si cercetari de  
metalurgie" (for Dumitrescu).

DUMITRESCU, Traian; SOLACOLU, N.

Modular cast iron alloyed with silicon, and gray iron alloyed with copper, as materials for piston rings. Studii cerc metalurgie 6 no.4:395-411 '61.

1. Membru al Comitetului de redactie, "Studii si cercetari de metalurgie" (for Dumitrescu).

DUMITRESCU, Tr.; IONESCU, C.St.; SOLACOLU, M.

Studies on the isothermic transformation of austenite in some alloyed and nonalloyed steels. Studii cerc metalurgie: 7 no.3:283-303 '62.

1. Membru al Comitetului de redactie, "Studii si cercetari de metalurgie" (for Dumitrescu).

IONESCU, Constantin, St.; SOLACOLU, Maria

Some scientific criteria for the thermal treatment of steels.  
Metalurgia constr mas 14 no.4:302-317 Ap '62.

1. Centrul de cercetari metalurgice.

① 22  
RUMANIA

DUMITRESCU, Traian; IONESCU, Constantin Șt.; SOLACOLU, Maria

(None)

Bucharest, Studii si Cercetari de Metalurgie, No 2, 1963,  
pp 131-153

"Aspects of the Process for Forming 'Bainite' In Some  
Carbon Steels and Alloys Fe-C-Mn."

(3)

DUMITRESCU, Traian, ing.; IONESCU, Constantin St., ing.; SOLACOLU, Maria, ing.

Contributions to the knowledge of the isothermal transformation of austenite in the Ar'' domain. Metalurgia constr mas 15 no.1:9-18 Ja '63.

1. Centrul de cercetari metalurgice al Academiei R.P.R.

SOLACOLU, M.

"Studii si cercetarii de metalurgie," v.7, no.3, 1962. A  
periodical review by M. Solacolu. Metalurgia si contra mas  
15 no.3:277-278 Mr '63.

SOLACOLU, M.

"Studii si cercetari metalurgice", Reviewed by M. Solacolu.  
Metalurgia Rum 15 no.4:332 Ap '63.



DUMITRESCU, Traian; IONESCU, Constantin St.; SOLACOLU, Maria

Aspects of the forming proces. of nainite in some carbon  
steels and Fe-C-Mn alloys. Studii cerc metalurgie 8 no.2:  
131-153 '63

DUMITRESCU, Traian; IONESCU, Constantin St.; SOLAGOLU, Maria

Aspects of the bainite formation process in some carbon steels  
and Fe-C-Mn alloys. Rev Roum metalurg 8 no. 2:155-174 '63.

40120 U, Serban

Correlation between thermal phase equilibria in the system  $\text{K}_2\text{O}-\text{CaO}-\text{Al}_2\text{O}_3-\text{SiO}_2$  and the nature of vitreous structures and the sulfate hardening properties of blast furnace slags. Rev chimie Roum 9 no. 10:633-647 C 1964.

1. Research Center for Inorganic Chemistry of the Romanian Academy, Bucharest, 1 Polizu Street.

CIOCOIU, Paulina; DINESCU, Amalia; DINESCU, R.; GOTHARD, Fr.; MINEA, I.;  
RUSSU, R.; SOLASOLU, S.

Synthesis and applications of some molecular sieves. Pt. 2. Rev  
chimie Min petr 15 no.7:404-408 J1 '64

CA 5

TERNARY compound:  $4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$  SERRAN SOLACOLU. Zement 21, 301-302 (1932). The existence of brownmillerite ( $4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$ ) was established by chem. and Röntgen-ray examn. The compd. is stable in the presence of excess  $\text{CaO}$ , and may show isomorphism and mixed crystals with dicalcium ferrite H. F. K.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990

1000 1100 1200 1300 1400 1500 1600 1700 1800 1900

2000 2100 2200 2300 2400 2500 2600 2700 2800 2900

3000 3100 3200 3300 3400 3500 3600 3700 3800 3900

4000 4100 4200 4300 4400 4500 4600 4700 4800 4900

5000 5100 5200 5300 5400 5500 5600 5700 5800 5900

6000 6100 6200 6300 6400 6500 6600 6700 6800 6900

7000 7100 7200 7300 7400 7500 7600 7700 7800 7900

8000 8100 8200 8300 8400 8500 8600 8700 8800 8900

9000 9100 9200 9300 9400 9500 9600 9700 9800 9900

Montenographic and microscopic examination of the constitution of cements.  
Serban Solacolu. *Zement* 22, 311-10(1933).--The research included the study of com-  
ponents and their several pure constituents. Cements lying within a field of the  
temp.-compn. triaxial diagram possess qual. uniformity. The  $SiO_2$  and  $Al_2O_3$  occur  
largely as the tri-Ca salts in the silicate cements having the greatest strength. In  
aluminous cements of one group the chief constituents are  $CaO$ ,  $Al_2O_3$  and beta- $2CaO$  -  
 $SiO_2$ . In the other group gehlenite and  $3CaO$   $SiAl_2O_6$  predominate. H. P. K.

ASB 35A METALLURGICAL LITERATURE CLASSIFICATION

100-566 METALLURGICAL LITERATURE CLASSIFICATION

Some cases of deteriorated cements. S. Salacolu. *Bull. Inst. Rom. Beton* 2, 3 10(1967); *Chimie & Industrie* 39, 106; cf. A. 31, 701;\*. An investigation into the relationships existing between the deterioration and the strength of portland cements. Loss on ignition, representing moisture and CO<sub>2</sub>, was taken as a criterion of deterioration. It was found that ordinary portland cements were less sensitive to deterioration than supercements. Crushing strength was less affected by deterioration than tensile strength. In portland cements the initial strength is affected by deterioration to a greater extent than the final strength; in supercements characterized by high initial strength this property disappears completely. A. P.-C.

100-566 METALLURGICAL LITERATURE CLASSIFICATION

20

24

The reliability of mortars and asphalt concretes. Ser-  
ban C. Solacolu. *Bull. inst. roumaine de constructi-  
si civile* 9, 127-44 (1933); *Chem. Zentr.* 1939, I, 1827.—  
The following are discussed as factors which influence the  
reliability of mortars and asphalt concretes: the nature  
of the added aggregate, that of the bitumen and of the  
filling material, heat, coking, water and working conditions.  
In general, the lack of reliability is greater than with ce-  
ment concrete. In any case, standardization of these  
various factors appears to be necessary for the use of such  
materials in road construction. M. G. Moore



C. a.  
1951

Cement, Concrete and Other Building  
Materials 20

The relation between hydraulic factors and the resistance  
of aluminous cement. Serban Solacoin. Acad. Rep. Popu-  
lare Romane, Bul. Stiinf., Ser. Mat., Fiz. Chim. 2, 81-9  
(1950) (French summary).—Aluminous cements with the  
highest resistance were found to be the ones with a Si modu-  
lus  $Al_2O_3\%/SiO_2\% = 30$  and an Al modulus  $Al_2O_3\%/Fe_2O_3\%$   
= 10. Gerhard Aufleger

SCLACOTU, S.

"Utilization of Bauxite for the Simultaneous Production of Aluminous Cement, Iron, and Aluminum. p/345." BULETIN STIINTIFIC. Vol.3, No. 2-4, Apr./Dec. 1951. Bucuresti, Rumania.

SO: Monthly List Of East European Accessions, L.C.Vol.2, No.11, Nov. 1953, Uncl

SOJACOLU, S.

*Metall* The role of thermal equilibria during the fusion and granulation of metallurgical slags. S. Sojacolu and D. Rotarescu (Polytech. Inst., Bucharest, Romania). *Acad. rep. populare Romane, Bul. stiint. Sect. stiint. teh. si chim.* 5, 99-129 (1953).—The hydraulic values (moduli) of the granulated slags in the system  $\text{CaO-MgO-Al}_2\text{O}_3\text{-SiO}_2$  were investigated, and discontinuous changes were found, with max. and min., as a function of the  $\text{Al}_2\text{O}_3$ , of the  $\text{CaO}$ , and of the  $\text{MgO}$  assays. The thermal equil. parageneses were investigated in this system, and a correlation was found between the type of the paragenesis of the slags and the hydraulic properties of same. The irregularity in the hydraulic resistances was not only a function of the oxide compn. of the slags, but also a function of the type of paragenesis. In this way the role of the thermal equil. upon fusion and granulation of the metallurgical slags were elucidated. It was thus concluded that the hydraulic properties of the slags depended upon the type of parageneses, the heterogeneous phase compn. detd. the hydraulic values. The parageneses were actually made up of 19 different minerals, which could be classified as melilitic, Akermanic-anorthitic, those with over 25%  $\text{Al}_2\text{O}_3$ , and those with free  $\text{MgO}$ . 20 references. Werner Jacobson

2

of

SOLACIU, S.; SERBAN, D.

Refractory aluminous cements. p. 465.

(INDUSTRIA CONSTRUCTIILOR SI A MATERIALELOR DE CONSTRUCTII. No. 7, 1957, Rumania)

SO: Monthly List of East European Accessions (EEAL) LC. Vol. 2, No. 12, Dec. 1957  
Uncl.

SOLACOLU, SERBAN

H-13d

ROMANIA/Chemical Technology, Chemical Products and Their  
Application, Part 2. - Ceramics, Glass, Binders,  
Concretes, - Binders, Concretes and Other Sili-  
cate Building Materials.

Abs Jour: Referat. Zhurnal Khimiya, No 10, 1958, 3337.

Author : Serban Solacolu, Dumitru Serban.

Inst : Not given.

Title : Refractory Alumina Cements.

Orig Pub: Ind. construcțiilor și mater. constr., 1957, No 8,  
465-472.

Abstract: The results of experimental studies of hydraulic pro-  
perties of some highly aluminous cements (HC) of the  
system  $\text{SiO}_2$  -  $\text{Al}_2\text{O}_3$  -  $\text{Fe}_2\text{O}_3$  -  $\text{CaO}$  are presented. In  
all, 22 synthetic mixtures containing (in % by weight)  
 $\text{SiO}_2$  from 3 to 10,  $\text{Al}_2\text{O}_3$  from 37.4 to 79.6,  $\text{Fe}_2\text{O}_3$  from

Card : 1/2

SOLA 11/1

Electronic differential thermobalance. Serban Schicilul, Petre Balta, and Radu Dinescu (Inst. Politehnic, Bucharest, Romania). *Bul. inst. politehnic Bucuresti* 19, 199-204 (1957) (Russian and French summaries).—An ordinary analytical balance with a sensitivity of 0.1 mg. was used. The equil. position is detected by a capacitor mounted on one of the arms of the balance; the capacitance depends on the position of the arm and it is relayed electronically. The equil. is restored by an electromagnetic system attached to the other arm of the balance. The potentiometric memorization system for the differential loss in wt. is part of the electromagnetic restoring system. A millivoltmeter recorder with a triple switch is used to record either the temp., the normal loss in wt., or the differential loss in wt. The elec. furnace with a program regulator for 100-200°/hr. can be heated up to 1500° and it is located just below one arm of the balance. The precision of the balance, which is of the order of 0.1%, corresponds to the sensitivity.

A. Berne

9/1

SOLACOLU, S. (Prof. Dr.)

S. Solacolu, "Die Phasen thermischer Gleichgewichte des Systems  $\text{MgO}-3\text{CaO} \cdot \text{SiO}_2-2\text{CaO} \cdot \text{SiO}_2-3\text{CaO} \cdot \text{Al}_2\text{O}_3-4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$ . Die Gleichgewichte der dolomitischen Feuerfesten Stoffe," Bericht der Deutschen Keramischen Gesellschaft e. V. (Wuerzburg), 34/5, May 1957, pp. 141-6.

Received on 6 November 1956.

From the Silicate Chemical Laboratory of the Polytechnical Institute, Bucharest. The author's address is given as Bucharest Polytechnic Institute, Calea Grivita 132.

HUNGARY/Chemical Technology. Chemical Products  
and Their Applications. Ceramics. Glass.  
Binding Materials. Concrete.

H-13

Abs Jour : Ref Zhur-Khimiya, No 7, 1959, 24247

Author : Solacolu, S.

Inst :       

Title : New Investigations Pertaining to Structure  
and Hydraulic Properties of Blast Furnace  
Slags.

Orig Pub : Epitoanyag, 1958, 10, No 4-5, 149-153

Abstract : Hydraulic (binding) properties of the  
blast furnace slag (S), belonging to the  
CaO - MgO - Al<sub>2</sub>O<sub>3</sub> - SiO<sub>2</sub> system are presen-  
ted graphically in equilibrium diagrams of  
the MgO - CaO - Al<sub>2</sub>O<sub>3</sub> - SiO<sub>2</sub>, in the range

Card : 1/2

14-66



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B007/B058

15.2210

AUTHOR: Solacolu, Serban

TITLE: Influence of the Liquid Phase on Properties of Magnesite Refractories

PERIODICAL: Silikattechnik, 1961, No. 1, pp. 17-21

TEXT: The physical properties of magnesite refractories depend on their composition, the amount of liquid phase formed at higher temperature, and on the mineralizing process of solid phases in a state of equilibrium, especially the periclase. The position of magnesite-, dolomite-magnesite-, spinel-magnesite-, and forsterite-magnesite refractories in the multi-component system  $\text{MgO} - \text{MgO} \cdot \text{Al}_2\text{O}_3 - \text{MgO} \cdot \text{Fe}_2\text{O}_3 - 2\text{MgO} \cdot \text{SiO}_2 - 2\text{CaO} \cdot \text{SiO}_2$  was determined by the author in a previous paper (Ref. 1). For the determination of the liquid-phase influence on the firing properties (shrinkage, porosity), these refractories were synthesized, the amount of liquid phase at 1550°C was calculated from the thermal equilibrium and recorded in a diagram in dependence on composition expressed in modules. Further diagrams

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Influence of the Liquid Phase on Properties  
of Magnesite Refractories

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E007/B056

show shrinkage during firing and porosity as a function of composition. A direct proportionality between firing properties and the content of liquid phase was established; a summary diagram shows that shrinkage during firing increases and porosity decreases with increasing content of liquid phase. As the second component, the mineralizing process of the periclase determining the firing properties, was kept constant through the constant periclase content in the author's experimental series, it could be excluded from consideration. The present studies show that when selecting manufacturing formulas, the amount and composition of the liquid phase, besides the raw material composition, must be considered, since there are several products which at different initial composition show equal properties due to the equality of their liquid phase. There are 6 figures, 2 tables, and 1 non-Soviet reference.

ASSOCIATION: Laboratory of Silicate Chemistry of the Polytechnic  
Institute, Bucharest

Card 2/2

SOLACCLU, Serban

Thermal equilibriums of the system  $MgO-MgO.Al_2O_3-(MgO.Fe_2O_3)-2MgO.SiO_2-2CaO.SiO_2$  applicable to the mechanism of the reactions of magnesite refractories. Studii cerc metalurgie 6 no.4:425-450 '61.

1. Laboratorul chimia fizica a silicatilor, Institutul politehnic, Bucuresti.

SOLACOLU, Serban, prof. dr.

"Refractory materials in the siderurgical industry" by  
Janos Sovegyarto. Reviewed by Serban Solacolu.  
Metalurgia constr mas 13 no. 4: 373-374 Ap '61.

S/081/62/000/021/034/069  
B149/B101

AUTHORS: Solacolu, S., Szabó, Andrei

TITLE: Production of magnesia based on the Solvay method of soda production, and its conversion into refractory materials

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1962, 332, abstract 21K216 (Építőanyag" 1962, v. 14, no. 2, 1962, 59 - 64 [Hung.; summaries in Russ. and Ger.] )

TEXT: Calcined and slaked dolomite is used for the regeneration of  $\text{NH}_3$  in soda manufacture. A suspension of  $\text{Mg}(\text{OH})_2$  which results from this is decanted, filtered, washed and clinkered. The product, containing 80 - 85%  $\text{MgO}$ , is used directly for constructing soles of furnaces. If, however,  $\text{CaCO}_3$  is precipitated from the suspension by passing  $\text{CO}_2$  and if the resulting  $\text{Mg}(\text{HCO}_3)_2$  is separated by decantation and converted into  $\text{MgCO}_3$  by adding  $\text{Na}_2\text{CO}_3$  the product is a very pure basic magnesium carbonate, which is used for the manufacture of refractory materials. The calcination is done in two stages: first at  $800^\circ\text{C}$  in an annular kiln to

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Production of magnesia based on...

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obtain MgO powder, then in a rotating furnace, together with a mineralizer, until clinkering occurs. Ilmenite, bauxite, siderite, or ankerite are used as mineralizers. Chromo-magnesite and magnesite-chromite refractories are prepared, with a ratio 1:1 of rough and fine fractions. With increasing chromite content, the water absorption and heat resistance of the goods are increased. It was found that complete or partial substitution of chromite by bauxite makes it possible to obtain magnesite-spinel refractory materials; the baking temperature for chromo-magnesite goods is 1710°C and for magnesite goods 1620°C. [Abstracter's note: Complete translation.]

Card 2/2

SOLACOLU, Serban (Bukarest); BIRJAG, Ioan (Bukarest)

Remarks about A Jerphanion's lecture entitled "Use of  
natural gas in porcelain firing." Epitoanyag 15 no.11:  
419 N '63.

SOLACOLU, S.; DINESCU, R.; SINGER, G.; BALAN, V.

Viscosity of coal slags, effect of certain factors. Rev electro-  
techn energet 9 no.1:123-131 '64

1. Corresponding Member of the Rumanian Academy (for (Solacolu)



SOLACOLU, Seban; ROTARU, Maria

Binding materials for magnesitic and chromagnesitic refractors.  
Studii cerc metalurgie 9 no.2:361-371 '64.

1. Laboratory of Physical Chemistry of Silicates, Polytechnic  
Institute, Bucharest.

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ACCESSION NR: AP4044191

R/0003/64/015/007/0404/0408

AUTHOR: Ciocolu, Paulina, Dinescu, Amalia, Dinescu, R., Gothard, Fr., Minea, I.  
Rusu, R., Solacolu, S.

TITLE: The synthesis and uses of some molecular sieves. II. The synthesis of some granular molecular sieves from kaolin

SOURCE: Revista de Chimie, v. 15, No. 7, 1964, 404-408

TOPIC TAGS: molecular sieve, kaolin, kaolin sieve preparation, kaolin granulation, Malaxa process, kaolin extrusion, calcination

ABSTRACT: The authors report the results of experiments carried out with the intention of reproducing the synthesis of molecular sieves from kaolin, without the addition of binding agents and using methods which vary slightly from those previously described in the literature. The kaolin found in Agihres, Rumania, was used as the basic material; either the 1st (78% kaolin) or 2nd (75% kaolin) grade of this material may be used, both being able to yield sieves with high absorption capacities (25-32g H<sub>2</sub>O/100g) was pores of 4A. The static absorption capacities were first determined for both types of material; the results are reported in tables, and a schematic diagram of the laboratory apparatus used in also given. The various steps used in the actual manufacturing procedure are then described

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ACCESSION NR: AP4044191

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In detail, as follows: 1) The granulation of the kaolin to the desired dimensions (length  $\approx$  diameter) may be carried out by 2 methods: method (a) is based on the extrusion of wet kaolin paste, after previous heating at 120C and addition of 30% water ("Malaxa" process), drying and grinding of the extruded material, and final sorting of the granules; b) grinding of dry kaolin cakes directly to the desired dimensions, and subsequent sorting of the granules. 2) The calcination of the granules is carried-out partially in a laboratory oven and partially in an electric oven type KYLS, of 100 liters capacity, equipped with silica rods. The optimum temperature of calcination is 670-700C (not to exceed 750C), for a duration of 5 hours. Both ovens are equipped with temperature regulators, calibrated in intervals of  $\pm$  20C. 3) The alkali treatment phase is carried out with a 9-10% NaOH solution (not to exceed 16%), for a period of 5-10 hours. Mechanical stirring of the kaolin granules is not recommended. Consequently, the operation is carried out partially in a boiler without stirrer, and partially in a boiler equipped with a Cottrell pump system, for the reflux of the solution. During this operation, to produce a maximum absorption capacity of the molecular sieve structure, the diameter of the granules cannot exceed 2 mm. Following alkali treatment, the molecular sieves obtained are washed with water until the washing solution reaches a pH of 9-9.5. A schematic diagram of a laboratory-

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ACCESSION NR: AP4044191

scale apparatus for the alkali treatment of the kaolin granules is given. 4) The ion-exchange phase (exchange of sodium ions for calcium ions) is carried out by 2 treatments with a 25-33%  $\text{CaCl}_2$  solution, for 4 hours at the boiling temperature and under normal pressure. These parameters are considered optimal for the production of maximum absorption capacities. Following each treatment with  $\text{CaCl}_2$  the molecular sieves are washed with water in order to eliminate the traces of sodium ions remaining on the surface of the granules. 5) Activation of the sieves is carried out by a process of calcination for 1 hour at a temperature of 300-350°C. Prolonged calcination (4-5 hours) results in a stable absorption capacity, having a lower value (60-70% of the initial value). The molecular sieves obtained by this process have a mechanical resistance of 1-2  $\text{kg/mm}^2$ , as compared with 0.1 - 0.5  $\text{kg/mm}^2$  for those manufactured outside of Rumania, with a specific area between 500 and 700  $\text{m}^2/\text{g}$ , and a real density of 1.9-2.1  $\text{g/cm}^3$ . A diagram of an industrial installation for the manufacture of the 4A molecular sieves is given. The authors conclude by stressing the importance and specificity of the method for sieves having 4A pores. Molecular sieves with 5A pores, prepared by this method, have much lower absorption capacities. Orig. art. has: 3 figures and 7 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: GC, MT

NO REF SOV: 000

OTHER: 013

Card 3/3 *mc*

SOLACOLU, Serban

Correlation between phaseal, thermal equilibriums of the  $\text{MgO-CaO-Al}_2\text{O}_3\text{-SiO}_2$  system with the nature of vitreous structures and the properties of sulfatic strengthening of the slag of high furnaces. Studii cerc chim 13 no.10:653-658 O '64.

1. Center of Inorganic Chemistry, Rumanian Academy, Bucharest, 1 Polizu Street.

SOLACOLU-NICOLAID 17

Effect of aluminum upon the microstructures of cast irons with flaky and with nodular graphite. Traian Dumitrescu, Marin Solacolu-Nicolaide, and Alfred Kathrein. Acad. rep. populare Romine, Studii cercetari met. 3, 417-38 (1958).  
The cast iron studied contained flaky and nodular graphite and 3-4% Si. In the iron with flaky graphite, graphitization is complete with 3-4 and >10% Al. For the iron with nodular graphite, graphitizing action of Al has a max. at 3%. For both alloys, Al up to 3% will increase the amt. of ferrite (in this case  $\alpha$ -Fe-Al-Si) and will decrease the amt. of pearlite (in this case a mech. mixt. of ferrite with cementite alloyed to Al). This means that Fe-3Al has a completely ferritic structure. In iron with flaky or nodular graphite, >3 or >4% Al, resp., gives, in addn. to the  $\alpha$ -phase, also the  $\epsilon$ -phase. In iron with up to 5-6% Al, the  $\epsilon$ -phase forms with the  $\alpha$ -phase a fine, cryst. flaky aggregate, which seems to be similar to pearlite, but has a dendritic habitus. If the Al assay rises still higher, the  $\epsilon$ -phase will lose more and more its dendritic aspect, till at highest Al assays it looks like the ordinary complex mixt. of carbides. Nodular graphite occurs up to 11% Al, only if the section thickness is very low. Al exerts a new effect on the formation of nodular graphite, which will be more pronounced the lower the cooling rate of the sample. The hardness increases continuously with increasing Al, and for iron contg. nodular graphite at higher Al contents the alloy is harder than the iron contg. flaky graphite, which has the same amt. of Al and the same structure. Werner Jacobson

GW  
1/

Distr: 4E2c

9. 99

SOLAJ, V.

Review of current problems of friction, wear and lubrication. p. 1552.

TEHNIKA. Beograd, Yugoslavia. Vol. 14, no. 9, Sept. 1959.

Monthly List of East European Accessions (EEAI) LC Vol. 9, no. 2, Feb. 1960.

Uncl.

Solaja, V.

"Application of Dimensional Analysis for Calculation of Stress in Static Deformation." p. 95, (ZBORNIK, 1952/53. Beograd, Yugoslavia.)

SO: Monthly List of East European Accessions, (MEAL), LC,  
Vol. 4, No. 5, May 1955, Uncl.



SOLAJA, V.

"Filling up the Die in Static Deformation." p. 111, (SBORNIK, 1952/53.  
Beograd, Yugoslavia.)

SO: Monthly List of East European Accessions, (EEAL), LC,  
Vol. 4, No. 5, May 1955, Uncl.

J  
SOLAJA, V.

Applied Mechanics Reviews  
June 1954  
Theoretical and  
Experimental Methods

✓ 03. ✓ Solaja, V. The application of dimensional analysis  
in static deformation (in Serbian), Annual of the Mechanical En-  
gineering Faculty, Belgrade, 1953, 95-99.

The method is used to find the equation of the force necessary  
to elastically deform a solid body. By applying a proposal by  
✓ Zscheile, the equation is received in the form  $F = c \cdot d^{n_1} \cdot h^{n_2} \cdot l^{n_3}$ .  
The values of the coefficient  $c$  and the exponents  $n_1$ ,  $n_2$ , and  $n_3$  are  
tabulated for the various intervals of temperature and ratios of  
diameter/height. The discussion of the exponents provides in-  
formation on the influence of the dimensions of the body.

From author's summary by A. O. Schmidt, USA

② true

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8-25-53  
JPP

CLAUSE, W.

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